

Foliations and the Hopf Index Theorem

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(Tea 3:30 pm Math Lounge)

Abstract

The Euler characteristic is one of the simplest homotopy invariants of a smooth, closed, oriented manifold. The talk will begin with a description of three different ways to compute it. The last method, known as the Hopf index theorem, involves adding up the *indices* of zeros of a given vector field on the manifold. An analogue of the Euler characteristic, called the *basic Euler characteristic*, is used to study the topology of the leaf space of a Riemannian foliation. We present the appropriate analogue of the Hopf index theorem to the foliation setting, which uses information at the critical leaf closures of a basic vector field to compute the basic Euler characteristic.